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of Northern Antiquaries. He was profoundly versed in the antiquities of Scandinavia and Denmark, and was the author of many archæological works. Among them we would mention "Denmark in the early Iron age, illustrated by recent discoveries in the peat mosses of Slesvig-Holstein," a splendid quarto profusely illustrated and dedicated to the Princess of Wales. It was published in London in 1866.

GEOLOGY AND PALÆONTOLOGY.

NEW CHARACTERS OF THE PERISSODACTYLA CONDYLARTHRA.—Besides the characters of this group given in the NATURALIST for December, 1881 (page 1017), there are some further points of importance. The humerus in the two species of *Phenacodus*, where it is known, is much like that of the *Creodonta*, having a supracondylar foramen, and a simple condyle, without intertrochlear ridge. This is the only group of Ungulata where the supracondylar foramen occurs.

Numerous specimens of the species of *Meniscotherium* show that that genus belongs to the *Condylarthra*, and must be referred to a new family characterized by its more complex molar teeth. It is also possible that the number of the digits is different. The astragalus and humerus have the characters of those of *Phenacodus*, that is of the *Creodonta*. The two families of Condylarthra will be contrasted as follows :

Phenacodontidæ, Dentition tubercular. *Meniscotheriidæ*, Dentition lophodont, with external and internal crescents and deep valleys.—*E. D. Cope.*

MESONYX AND OXYÆNA.—In *Mesonyx ossifragus* the anterior limbs are much shorter than the posterior ones. This is especially marked in the humerus, which resembles in its form that of the otter. The ulna has a wide deep groove on its superior face, whose elevated external bounding ridge indicates a powerful extensor of the pollex, and supinator muscles. But the supination of the hand was impossible since the head of the radius is transverse and firmly fixed to the ulna. The greater length of the posterior limbs would indicate that the animal frequently rested on those extremities alone, in a position intermediate between those used by the bears and kangaroos. The species is as large as a bear, and has a very large head.

In *Oxyæna* the posterior foot has some characters like those of the seals. The cuboid bone is exactly like that of those animals, and it is evident that the external toes of the hind foot diverged extensively and were probably constructed for swimming.—*E. D. Cope.*

THE RHACHITOMOUS STEGOCEPHALI.—The segmented vertebræ characteristic of this order have been found in the genera *Eryops*, *Zatrachys* and *Trimerorhachis* in America, and *Actinodon* in

Europe. It was first pointed out by myself in *Eryops (Rhachitomus)* and *Trimerorhachis*, in the NATURALIST, May and Sept., 1878 (p. 633), and soon after by Gaudry in *Actinodon.* An examination of the figures and descriptions given by Von Meyer (Palæontographica) of the rather imperfect specimens of *Archegosaurus*, led me to believe that the vertebræ of that genus possess the segmented character also. I therefore included *Archegosaurus* in the same natural division with *Eryops*, etc., and employed for it the name *Ganocephala* which had been created by Owen for its reception.[1] It now appears from the descriptions of Dr. Fritsch that the vertebræ of *Archegosaurus* are not of the segmented type, but that they are discoidal, as in the *Labyrinthodontia.* Under these circumstances, the suborder *Ganocephala* must be given up, and a new name given to the suborder represented by *Eryops*, *Actinodon*, etc., and which I characterized in the Proceedings of the American Philosophical Society, for June, 1880. This suborder may be called the *Rachitomi*, and will include the following genera. *Trimerorhachis ; ? Parioxys ; Eryops ; Actinodon ; Zatrachys ; ? Pantylus.* There are two families, defined as follows :

Occipital condyle concave, undivided.......................... *Trimerorhachidæ*
Occipital condyle divided into two lateral condyles.................... *Eryopidæ*

But one genus can yet be referred to the first family; to the second belong *Actinodon* and probably *Zatrachys*, besides *Eryops.*—*E. D. Cope.*

MARSH ON THE DINOSAURIA.—Professor Marsh has published a more complete systematic arrangement of these reptiles than the one noticed in the March NATURALIST. In this he includes many of the genera described by European and American authors, and gives them their appropriate positions. Genera whose characters cannot be ascertained are omitted, and some synonymes are included.

GEOLOGICAL NEWS.—The Geology of Frenchman's bay, Maine, is treated of by W. O. Crosby in the Proc. Bost. Soc. Nat. Hist. The rocks consist of a schistose silver-bearing group, and a slate of Cambrian or Primordial age. A few fossils have been found in the same slate at other localities.——M. Daubree (Bull. Soc. Geol. de France) gives details of the two directions taken by joints or fractures in the cretaceous strata near Paris. These joints are usually parallel to the reliefs of the region, and the two systems are nearly at right angles to each other.—— The *Geological Magazine* for December, 1881, contains descriptions of some fossil Crustacea from the Stonesfield slate of Oxfordshire, England, by Hy. Woodward. Three species of *Eryon* and one of the curious larval-looking genus *Palæocaris*, hitherto known only from the *P. typus* of Meek and Worthen, are for the first time published.——The same magazine includes articles on the Bridlington and Dimlington (East Yorkshire) shell-beds, by G. W. Lamplugh; and on the "Parallelism of the Hanoverian and English Upper Jurassic," by C. Struckmann, translated by W. S. Dallas. One hundred and twenty-five fossil species are common to this formation in the two countries, nearly half of them bivalves. The North German Upper Jura is poor in Cephalopoda, and the small number of corals known to be common is most probably owing to the fact that the German corals are not yet worked out monographically.——A late issue of the Annales des Sci. Geologiques contains a malacological history of the Hill of Sansan, department of Gers, one of the richest deposits of fossils in France. The article includes a notice of the geology, with colored sections, and a dissertation upon the climate and topography of the region at the epoch of the deposit.——In the *Geological Magazine*, January, 1882, E. T. Newton, F. G. S., has some notes on the Birds, Reptiles and Amphibia of the Preglacial Forest Bed series of the East of England. Most of the birds are indeterminable, but the genera *Anser*, and, doubtfully, *Anas*, are identified. Reptiles and amphibia have never previously been noted from those beds.——In the same number H. H. Howorth, F. S. A., writes of the "Traces of a Great Post-glacial Flood," as shown by the loess, the shells of which are land shells, while the relics of man and animal remains tell the same tale.——A. G. Nathrost (Kongl. Svenska Vetenskaps-Akad. Hand.) shows that it is not improbable that many markings referred to algæ are really trails of animals. He especially refers *Eophyton* to the trails of Medusæ.——In the Reports, British Association, Section C. York Meeting, J. Prestwich argues against the generally accepted theory of volcanic action, the first cause of which he believes to be the welling up of the lava in consequence of pressure due to slight contraction of a portion of the earth's crust; this lava vaporizes the waters in the crevices of the volcano as well as those that afterwards flow into the cavities, and thus explosions are produced.——The last issue of the *American Journal of Science* contains an article by J. D. Dana, upon the "Flood of the Connecticut River valley from the melting of the Quarternary Glacier." The author refers the "kames" in the Connecticut valley, and terrace formations in general, to conditions at variance with those of Mr. Upham.——In the same journal Mr. A. O. Derby shows that, under the name of itacolumite, two very distinct geological series have been confounded, the newer of which is almost exclusively quartzite, but in places contains pebbles of all the rocks of the older series, including the diamond. Diamonds have also been taken from clay *(barro)*. The original diamond formation of Brazil is stated to be probably Cambrian.——The International Geological Congress of Bologna decided during the session of one week in September last that a chart of Europe should be published at Berlin on a scale of 1 : 1,500,000. The terms employed are to be Group for the highest divison, System for the next, Series for the third, Stage for the fourth, for the fifth Assize or Couche. Formation was not adopted because it has other meanings.——M. St. Meunier has succeeded in artificially forming enstatite, a mineral which is common in meteorites, and in a section shows fan-shaped or star-shaped forms. It is out of those forms, producible (as M. St. Meunier remarks) in a porcelain tube heated to redness, that the fancy of Mr. Otto Hahn constructed the crinoids and sponges which form the subject of his work.——At a recent meeting of the New York Acad. of Sciences, Dr. Alexis A. Julien read an able paper upon the volcanic tuffs of Idaho and other western localities.

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[1] Proceeds. Amer. Philosoph. Soc., 1880, June.

MINERALOGY.[1]

HELVITE FROM AMELIA COUNTY, VIRGINIA.—Among some minerals recently obtained from the mica mine near Amelia Courthouse, Virginia, already famous for its microlite, was a yellow, crystalline substance which upon examination has proved to be *Helvite.* The mineral occurs in crystals and friable crystalline masses imbedded in bluish-white orthoclase, and is generally associated with pale red topazolite. While no crystals were found sufficiently perfect to allow of measurement, the absence of any action upon polarized light proved their isometric character.

The mineral has a hardness of about 6, a specific gravity of 4.306 (Haines), a sulphur-yellow color, a somewhat resinous lustre, and is partially translucent. It fuses at about 4 with intumescence to a brown glass, gives no water in the closed tube, and with the fluxes gives the reactions for manganese. Fused on charcoal with soda, it gives a hepar. It is soluble in hydrochloric acid, evolving sulphuretted hydrogen and leaving a residue of gelatinous silica.

My friend, Mr. Reuben Haines, has been kind enough to contribute the following analysis:

Gangue (SiO_2 insoluble in $NaCO_3$)	9.22
SiO_2	23.10
BeO	11.47
MnO	45.38
Fe_2O_3	2.05
Al_2O_3	2.68
CaO	.64
K_2O	.39
Na_2O	.92
S	4.50
	100.35

The mineral was dissolved in HCl, and the "gangue" found by repeatedly washing the total SiO_2 on the filter with a hot concentrated solution of $NaCO_3$, which removed all the soluble SiO_2. By

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[1] Edited by Professor HENRY CARVILL LEWIS, Academy of Natural Sciences, Philadelphia, to whom communications, papers for review, etc., should be sent.